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REMARKS

Applicants respectfully request reconsideration of this Patent Application, particularly in view of the above Amendment and the following remarks. No additional claim fee is required for this Amendment as the number of independent claims is not more than three, and the total number of claims is not more than previously filed.

A Request for Continued Examination and a Petition for a two-month extension of time, along with the required fees, are enclosed. Should any additional fee be required, the undersigned authorizes the Commissioner to charge Deposit Account 19-3550.

Request for Telephone Interview

If the undersigned has not already contacted the Examiner, Applicants kindly request the Examiner to contact the undersigned at (847) 490-1400 to schedule a telephone interview, to discuss the merits of this Patent Application.

Amendment to the Claims

Claims 1 and 34 have been amended to clarify the structure of the electro-photographic print unit. Claim 35 has been canceled without prejudice and

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Claim 36 has been added. Support for this Amendment can be found at page 8, last paragraph, and at page 5, first paragraph. No new matter has been added to the claims by this Amendment.

Claim Rejections - 35 U.S.C. §103

The rejection of Claims 1-6, 19-22, 26, and 33 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, is respectfully traversed.

Yasuda et al. is cited for teaching Applicants' recited printing device, and Rau et al. is applied for teaching an internal cooling mechanism for a transfer cylinder.

Claim 1 is amended to clarify that the printing device has an electro-photographic print unit (30) including a cylindrical photoconductor (32) to which a transfer medium (34) for transferring a toner powder to a substrate (13) in a transfer zone is assigned. This Amendment is made to emphasize the apparent differences between the claimed invention and the prior art references, as discussed below.

The claimed invention includes a photoconductor (32) and a transfer medium (34). In Fig. 1, each of these elements is embodied as a roller. The toner applied to charged photoconductor is then intermediately transferred to the transfer

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medium. In the claimed invention, a heater heats the substrate upstream of the transfer medium, and the transfer medium is cooled by a cooling device. The result is a transfer zone where the transfer medium has a lower temperature than the substrate. Applicants have discovered that this arrangement aids release of the toner from the transfer medium, particularly for glass and plastic substrates (Claim 36), while also benefiting the photoconductor from lower temperatures.

The Office Action combines Yasuda et al., which teaches an electronic printing technique for paper, with Rau et al., which is directed to an offset printing technique that is not related to electronic printing. Applicants respectfully disagree that one of ordinary skill in the art would have found the combination obvious for at least the following reasons.

Yasuda et al. does not disclose a transfer medium. The Office Action refers to element 1 as a transfer medium, but element 1 is a photoconductor. Applicants have amended the claimed invention to clarify that the electro-photographic print unit also includes a photoconductor. The combination thus does not provide all claim limitations, and it would not have been obvious to add the recited transfer medium to the Yasuda et al. device.

Yasuda et al. discloses a process using encapsulated toner (Abstract). Yasuda et al. is clear that the transfer process and the fixing process are carried out

simultaneously (e.g., Abstract; page 5, last paragraph; and Claim 1). In Yasuda et al., once the toner is transferred, it is fixed and cannot be transferred again. One skilled in the art would have understood that the toner disclosed in Yasuda et al. cannot be used with a transfer medium. One skilled in the art would have further understood from Yasuda et al. that the preheating of the paper is due to the encapsulated toner. There is no suggestion, motivation, or basis for one of ordinary skill in the art to apply the preheating step of Yasuda et al. to a different electronic printing device using intermediate transfer mediums, as recited in Applicants' claimed invention.

There also would have been no basis for one of ordinary skill in the art to combine Rau et al. with Yasuda et al. As stated above, Rau et al. is directed to waterless offset printing, which is very different from electronic printing. Further, Rau et al. uses numerous intermediate rolls that cannot be implemented in the device of Yasuda et al. There is no disclosure in Rau et al. to suggest to one of ordinary skill in the art on how to implement a cooling device associated with a transfer medium in the device of Yasuda et al. The combination neither provides a reasonable basis for making the combination nor a reasonable expectation of success in combining these two very different printing technologies, particularly when the Yasuda et al. device teaches away from any use of a transfer medium.

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For at least these reasons, Applicants respectfully assert that the claimed invention (as amended for clarity) would not have been obvious over Yasuda et al. and Rau et al. Favorable reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of Claims 7, 23, and 32 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Thompson et al., U.S. Patent 5,640,659, is respectfully traversed. Thompson et al. teaches heating a transfer roll and the toner thereon. Thompson et al. does not provide the necessary disclosure to overcome the deficiencies discussed above.

The rejection of Claims 8, 10, and 11 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Thompson et al., U.S. Patent 5,640,659, and in view of Ogawa, U.S. Patent Publication 2003/0007055, is respectfully traversed.

Thompson et al. teaches heating a transfer roll and the toner thereon. Ogawa teaches heaters 46 and 47 for also heating a print medium. Together, these references teach heating a toner, which is the opposite of Applicants' recited heating

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of the substrate upstream from the transfer zone and cooling the transfer medium which carries the toner. Thompson et al. and/or Ogawa do not provide the necessary disclosure to overcome the deficiencies discussed above.

The rejection of Claim 12 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Thompson et al., U.S. Patent 5,640,659, in view of Ogawa, U.S. Patent Publication 2003/0007055, and in view of Spsychalla et al., U.S. Patent 5,908,000, is respectfully traversed.

Spsychalla et al. discloses a sensor for use in heat-curing applied ink. The combination does not provide or suggest Applicants' sensor-controlled upstream heating of a substrate and cooling of the transfer medium to maintain a lower transfer medium/toner temperature in the transfer zone.

The rejection of Claims 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Thompson et al., U.S. Patent 5,640,659, in view of Ogawa, U.S. Patent Publication 2003/0007055, in view of Spsychalla et al., U.S. Patent

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5,908,000, and in view of Moslehi et al., U.S. Patent 5,156,461, is respectfully traversed.

The Office Action states that Moslehi et al. teaches a plurality of temperature sensors arranged over the entire print width and each associated with a heating element. Moslehi et al. teaches using sensors for forming semiconductor wafers. There is no readily apparent need or suggestion for this complex sensor device, and heating zones, to be used in the relatively simple ink curing process of Spychalla et al. Favorable reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of Claim 15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Thompson et al., U.S. Patent 5,640,659, in view of Ogawa, U.S. Patent Publication 2003/0007055, in view of Spychalla et al., U.S. Patent 5,908,000, and in view of Kurz, U.S. Patent 5,375,518, is respectfully traversed. There is no basis to implement the roller of Kurz in the combination with Yasuda et al., in view of the discussion above.

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The rejection of Claim 24 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Ogawa, U.S. Patent Publication 2003/0007055, is respectfully traversed. This dependent claim is patentable for at least the same reasons as discussed herein for independent Claim 1. Comments on the prior art combinations are stated above, and not repeated for sake of brevity.

The rejection of Claim 27 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Ogawa, U.S. Patent Publication 2003/0007055, in view of Spsychalla et al., U.S. Patent 5,908,000, is respectfully traversed. This dependent claim is patentable for at least the same reasons as discussed herein for independent Claim 1. Comments on the prior art combinations are stated above, and not repeated for sake of brevity.

The rejection of Claims 28 and 29 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Spsychalla et al., U.S. Patent 5,908,000, and in view of Moslehi et al., U.S. Patent 5,156,461, is respectfully traversed. These dependent

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claims are patentable for at least the same reasons as discussed herein for independent Claim 1. Comments on the prior art combinations are stated above, and not repeated for sake of brevity.

The rejection of Claim 30 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Kurz, U.S. Patent 5,375,518, is respectfully traversed. This dependent claim is patentable for at least the same reasons as discussed herein for independent Claim 1. Comments on the prior art combinations are stated above, and not repeated for sake of brevity.

The rejection of Claims 17, 31, 34, and 35 under 35 U.S.C. §103(a) as being unpatentable over Yasuda et al., U.S. Patent 5,640,659, in view of Rau et al., U.S. Patent 5,784,957, in view of Spychalla et al., U.S. Patent 5,908,000, is respectfully traversed. The dependent claims are patentable for at least the same reasons as discussed herein for independent Claim 1. Comments on the prior art combinations are stated above, and not repeated for sake of brevity.

Claim 34 is also amended to include a photoconductor, as well as additional details on the electro-photographic print unit. The above comments on

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Claim 1 are also appropriate for amended Claim 34, and are not repeated for sake of brevity.

New Claims

Regarding new Claim 36, the prior art combination of Yasuda et al. and Rau et al. are not directed to printing on glass or plastic substrates. The prior art of record does not provide or suggest Applicants' recited printing device including an electro-photographic print unit including a cylindrical photoconductor to which a transfer medium for transferring a toner powder to a substrate in a transfer zone is assigned for printing on a rigid glass or plastic substrate by heating the substrate upstream and cooling the transfer medium with an associated cooling device.

Conclusion

Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not addressed or resolved in this response, the undersigned attorney again requests a telephone interview with the Examiner.

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Applicants sincerely believe that this Patent Application is now in condition for allowance and, thus, respectfully request early allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'M. Swanson', with a horizontal line extending to the right.

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